IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Mahendra Madhukar Patil et al.	§	Group Art Unit: 3749
Serial No.: 10/812,338	§	Examiner: Elizabeth Sarah Suereth
Filed: March 29, 2004	§	Confirmation No.: 2694
For: SYSTEM AND METHOD FOR MANAGING AIR FROM A COOKTOP	§	Atty. Docket: 140320-1/YOD GERD:0106

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December 5, 2007	/Patrick S. Yoder/
Date	Patrick S. Yoder

APPEAL BRIEF PURSUANT TO 37 C.F.R. §§ 41.31 AND 41.37

This Appeal Brief is being filed in furtherance to the Notice of Appeal mailed on July 11, 2007, and received by the Patent Office on July 16, 2007, and in Response to the Notice of Non-Compliant Appeal Brief mailed on November 6, 2007.

Appellants believe the requisite fee of $510.00 was paid at the time of the initial submission of the Appeal Brief on October 22, 2007. However, the Commissioner is authorized to charge any additional fees which may be necessary to advance prosecution of the present application, to Deposit Account No. 07-0868, Order No. 140320-1/YOD (GERD:0106), ***only if*** such fees have not already been charged.

Also, earlier requested, Appellants previously requested a one (1) month extension in the statutory period for submission of the Appeal Brief, from September 16, 2007 to October 16, 2007, in accordance with 37 C.F.R. § 1.136, and the Commissioner

was authorized to charge the requisite fee of $120.00, and any other fee that may be required, to Deposit Account No. 07-0868, Order No. 140320-1/YOD (GERD:0106).

1. **REAL PARTY IN INTEREST**

The real party in interest is General Electric Company, the Assignee of the above-referenced application by virtue of the Assignment to General Electric Company by Mahendra Madhukar Patil and David Joseph Najewicz, recorded at reel 015163, frame 0117, and dated September 23, 2007. Accordingly, General Electric Company, as the parent company of the Assignee of the above-referenced application, will be directly affected by the Board's decision in the pending appeal.

2. **RELATED APPEALS AND INTERFERENCES**

Appellants are unaware of any other appeals or interferences related to this Appeal. The undersigned is Appellants' legal representative in this Appeal.

3. **STATUS OF CLAIMS**

Claims 1-14 and 16-27 and 29-43 are currently pending, are currently under final rejection and, thus, are the subject of this Appeal. Claims 15 and 28 were earlier canceled.

4. **STATUS OF AMENDMENTS**

An amendment to claim 22 was filed on May 15, 2007 in Response to the Final Office Action. The amendment inserted recitations into claim 22 that were originally contained in claim 28, which depended from claim 22, and was concurrently canceled. The Examiner indicated in the Advisory Action mailed June 12, 2007 that the amendment would not be entered.

5. **SUMMARY OF CLAIMED SUBJECT MATTER**

The present invention relates generally to the field of ventilating systems for moving, treating and venting air in a space. *See* Application, page 1, paragraph 001.

More particularly, in certain embodiments, the invention relates to ventilating systems, such as those used with cooktops. *See id.*

The Application contains four independent claims, namely, claims 1, 14, 22 and 35, all of which are the subject of this Appeal. The subject matter of these claims is summarized below.

With regard to the aspect of the invention set forth in independent claim 1, discussions of the recited features of claim 1 can be found at least in the below cited locations of the specification and drawings. By way of example, an embodiment in accordance with the present invention relates to a kitchen ventilation system (e.g., 10) comprising a sensor (e.g., 14) for detecting a chemical composition (e.g., 34) over an active zone (e.g., 30) of a cooktop (e.g., 28) and an air moving device (e.g., 16) for displacing air including the chemical composition. *See, e.g., id.* at page 4, paragraph 0021; *see also* FIGS. 1 and 3. The kitchen ventilation system also includes an air flow direction control device (e.g., 18) for directing air displaced by the air moving device between exhaust and recirculation flow paths and control circuitry (e.g., 40) coupled to the sensor, to the air moving device and to the air flow direction control device for regulating operation of the air moving device and a position of the air flow direction control device based upon signals from the sensor. *See, e.g., id.* at page 4, paragraph 0021; *see also id.* at page 5, paragraphs 0023 and 0024.

With regard to the aspect of the invention set forth in independent claim 14, discussions of the recited features of claim 14 can be found at least in the below cited locations of the specification and drawings. By way of example, an embodiment in accordance with the present invention relates to a method for ventilating air over an active side (e.g., 30) of a cooktop (e.g., 28) comprising detecting a chemical composition (e.g., 34) over a cooktop on which cooking is performed through a sensor (e.g., 14) and controlling an air moving device (e.g., 16) for displacing air from the cooktop and an air flow direction control device (e.g., 18) for directing air displaced by the air moving

device between exhaust and recirculation flow paths based upon the sensed chemical composition over the cooktop. *See, e.g., id.* at page 4, paragraph 0021-0024; *see also* at page 10, paragraphs 0038-0039; *see also* FIGS. 1, 3 and 4.

With regard to the aspect of the invention set forth in independent claim 22, discussions of the recited features of claim 22 can be found at least in the below cited locations of the specification and drawings. By way of example, an embodiment in accordance with the present invention relates to a kitchen ventilation system (e.g., 10) comprising a sensor (e.g., 14) for detecting an operating parameter of a cooktop (e.g., 28) and an air moving device (e.g., 16) for displacing air from the cooktop. The kitchen ventilation system also includes an air flow direction control device (e.g., 18) for directing air displaced by the air moving device between exhaust and recirculation flow paths and control circuitry (e.g., 40) coupled to the sensor, to the air moving device and to the air flow direction control device for regulating operation of the air moving device and a position of the air flow direction control device based upon signals from the sensor, wherein operation of the control circuitry is configurable based upon site-specific factors of a site in which the ventilation system is installed. *See, e.g., id.* at page 4, paragraph 0021; *see also* at page 11, paragraphs 0040 and 0041; *see also* FIG. 5.

With regard to the aspect of the invention set forth in independent claim 35, discussions of the recited features of claim 35 can be found at least in the below cited locations of the specification and drawings. By way of example, an embodiment in accordance with the present invention relates to a kitchen ventilation system (e.g., 10) comprising a sensor (e.g., 14) for detecting an operating parameter of a cooktop (e.g., 28) and an air displacement system including an air moving device (e.g., 16) for displacing air from the cooktop, and an air flow direction control device (e.g., 18) for directing air displaced by the air moving device between exhaust and recirculation flow paths. The kitchen ventilation system also includes control circuitry (e.g., 40) coupled to the sensor and to the air displacement system for regulating operation of the air displacement system based upon signals from the sensor and upon characteristics of the air displacement

system to reduce acoustic noise of the ventilation system during operation. *See, e.g., id.* at page 4, paragraph 0021; *see also* at page 14, paragraph 0050; *see also* FIGS. 1 and 3.

A benefit of the invention, as recited in these claims, is the ability to detect an operating parameter of a cooktop and control an air moving device and an air flow direction control device based upon the sensed operating parameter. *See, e.g., id.* at page 4, paragraph 0021-0024; *see also* at page 10, paragraphs 0038-0039; *see also* FIGS. 1, 3 and 4.

This is a clear difference and distinction from the prior art, as discussed below.

6. **GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

First Ground of Rejection for Review on Appeal:

Whether the Examiner met the burden of establishing a *prima facie* case that claims 1-7, 14, 16-20, 22-27 and 35-43 under 35 U.S.C. § 103(a) as being as being rendered obvious by Melink (U.S. Patent No. 6,170,480, hereinafter "Melink") in view of Bowen (U.S. Patent No. 4,146,016, hereinafter "Bowen"), and further in view of Morton (U.S. Patent No. 6,349,716, hereinafter "Morton").

Second Ground of Rejection for Review on Appeal:

Whether the Examiner met the burden of establishing a *prima facie* case that claims 8, 9, 11-13, 21, 29, 30 and 32-34 under 35 U.S.C. § 103(a) as being as being rendered obvious by Melink in view of Bowen, and further in view of Morton and further in view of Wang et al. (U.S. Patent No. 5,236,595, hereinafter "Wang").

Third Ground of Rejection for Review on Appeal:

Whether the Examiner met the burden of establishing a *prima facie* case that claims 10 and 31 under 35 U.S.C. § 103(a) as being as being rendered obvious by Melink in view of Bowen, further in view of Morton, and further in view of Wang and Jensen et al. (U.S. Patent No. 6,521,859, hereinafter "Jensen").

7. **ARGUMENT**

As discussed in detail below, the Examiner has improperly rejected the pending claims. Further, the Examiner has not satisfied the burden of establishing a *prima facie* case in rejecting the claims under Section 103. Accordingly, Appellants respectfully request full and favorable consideration by the Board, as Appellants strongly believe that claims 1-14 and 16-43 are currently in condition for allowance.

A. **First Ground of Rejection for Review on Appeal:**

The Examiner rejected claims 1-7, 14, 16-20, 22-27 and 35-43 under 35 U.S.C. § 103(a) as being as being rendered obvious by Melink in view of Bowen, and further in view of Morton. Independent claims 1, 14, 22 and 35 will be discussed separately below. Appellants respectfully traverse this rejection.

1. **Judicial precedent has clearly established a legal standard for a *prima facie* obviousness rejection.**

In accordance with MPEP § 2142, the initial burden is on the Examiner to provide some suggestion of the desirability of doing what the inventor has done. "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the Examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." Ex parte Clapp, 227 U.S.P.Q. 972, 973 (Bd. Pat. App. & Inter. 1985).

2. **The Examiner's rejection of independent claims 1, 14, 22 and 35 is improper because the rejection fails to establish a *prima facie* case of obviousness.**

Independent claim 1 recites:

> A kitchen ventilation system comprising:
> a sensor for detecting a *chemical composition* over an active zone of a cooktop;
> an air moving device for displacing air including the chemical composition;

an air flow direction control device for directing air displaced by the air moving device between exhaust and recirculation flow paths; and

control circuitry coupled to the sensor, to the air moving device and to the air flow direction control device for *regulating operation of the air moving device and a position of the air flow direction control device based upon signals from the sensor.* (Emphasis added.)

Independent claim 14 recites:

A method for ventilating air over an active side of a cooktop comprising:

detecting a *chemical composition* over a cooktop on which cooking is performed through a sensor;

controlling an air moving device for displacing air from the cooktop and an air flow direction control device for directing air displaced by the air moving device between exhaust and recirculation flow paths *based upon the sensed chemical composition* over the cooktop. (Emphasis added.)

Independent claim 22 recites:

A kitchen ventilation system comprising:

a sensor for detecting an operating parameter of a cooktop;

an air moving device for displacing air from the cooktop;

an air flow direction control device for directing air displaced by the air moving device between exhaust and recirculation flow paths; and

control circuitry coupled to the sensor, to the air moving device and to the air flow direction control device for regulating operation of the air moving device and a position of the air flow direction control device based upon signals from the sensor, wherein *operation of the control circuitry is configurable based upon site-specific factors of a site in which the ventilation system is installed.* (Emphasis added.)

Independent claim 35 recites:

A kitchen ventilation system comprising:

a sensor for detecting an operating parameter of a cooktop;

an air displacement system including an air moving device for displacing air from the cooktop, and an air flow

direction control device for directing air displaced by the air moving device between exhaust and recirculation flow paths; and

control circuitry coupled to the sensor and to the air displacement system *for regulating operation of the air displacement system* based upon signals from the sensor and upon characteristics of the air displacement system to *reduce acoustic noise* of the ventilation system during operation. (Emphasis added.)

a. Melink, Bowen and Morton even in combination do not teach control of an air flow control device based upon a sensed chemical composition.

First, Melink, Bowen and Morton even in combination do not disclose or suggest control of an air flow direction control device based upon a sensed chemical composition. The Examiner asserted that Melink discloses a sensor for detecting smoke and combustion products, an air moving device and control circuitry coupled to the sensor and the air moving device for regulating operation of the air moving device. The Examiner admitted that Melink does not discuss operating in either recirculation or exhaust mode utilizing an air flow direction control device connected to a controller. The Examiner relied upon Bowen to teach an adjustable damper that is movable between exhaust and recirculation positions. However, the Examiner admitted that Bowen does not suggest that the damper is automatically controlled, and relied upon Morton to teach an air flow direction control device for directing the air between exhaust and recirculation pathways based upon signals from a temperature sensor.

As stated in the specification of the present application, the operation of the air moving device and the air flow direction control device is controlled based upon the sensed chemical composition over the cooktop. *See, e.g., id.* at page 4, paragraph 0021; *see also id.* at page 9, paragraphs 0023 and 0024 According to the specification, the sensed chemical composition might include cooking fumes, vapors, smoke and

combustion byproducts that are being generated as a result of cooking activities of a user of the cooking apparatus combinations thereof. *See, e.g., id.* at page 9, paragraph 0037.

The cited references, taken alone or in hypothetical combination, fail to teach or suggest control of the air flow direction control device based upon a *sensed chemical composition* over the cooktop, as recited by independent claims 1, and 14. Melink teaches a kitchen exhaust system that is adapted to exhaust air at a plurality of volume rates to improve the comfort, health and safety conditions in a kitchen. *See* Melink, Abstract, lines 1-5. Melink fails to disclose an air flow direction control device for directing air displaced by the air moving device between exhaust and recirculation flow paths and control of such air flow direction control device based upon the sensed chemical composition over the cooktop.

Bowen teaches a kitchen stove hood having two venting modes of operation through an adjustable damper. However, Bowen fails to teach automatic control of the damper based upon a sensed chemical composition over the cooktop. *See* Bowen, Abstract, lines 1-2. Morton teaches a multi-position damper located within a hood structure of a kitchen ventilator and control of energization of a damper based upon a sensed temperature of the hood structure. *See* Morton, Summary, lines 39-41. Morton does not teach control of an air moving device and an air flow direction control device based upon a sensed chemical composition.

In view of these deficiencies, among others, the cited references, taken alone or in hypothetical combination, cannot render obvious the current independent claims 1 and 14 and their dependent claims.

b. Rebuttal to Examiner's response to arguments.

In Response to Arguments advanced by Appellants in previous filings, the Examiner argued that Morton teaches a temperature sensor that is positioned inside of the

hood and serves to monitor the temperature within the hood, which obviously includes the temperature of the exhaust products flowing past the sensor.

However, Appellants are not attempting to claim control of the air flow direction control device based *upon the sensed temperature*. Rather, as recited in claims 1 and 14, the control of the air moving device and the air flow direction control device is based upon a sensed chemical composition over the cooktop.

Absent any teaching of the recitations of claim 1 and 14 regarding control of the air flow direction control device based upon a sensed chemical composition, the cited references, taken alone or in hypothetical combination, cannot render obvious the current independent claims 1 and 14 and their dependent claims. For at least this reason, the Appellants respectfully request that the Board overturn the Examiner's rejections of claims 1 and 14, as well as the claims that depend therefrom.

c. Melink, Bowen and Morton even in combination do not teach control circuitry configurable based upon site-specific factors of a site of installation.

With regard to independent claim 22, Appellants respectfully note that the deficiencies of the cited references noted above pertaining to the absence of any disclosure of control circuitry being configurable based upon site-specific factors are equally applicable here.

As noted above, independent claim 22 recites that the control circuitry is configurable based upon site-specific factors of a site in which the ventilation system is installed. The site-specific factors include at least one of hood width, site dimensions, installation location, height above the cooktop and type of fuel. *See, e.g., id.* at page 4, paragraph 0021; *see also* at page 11, paragraphs 0040 and 0041; *see also* FIG. 5.

The Examiner asserted that Melink discloses that the controller is configurable by the user, which is read as meeting the claimed configurability based on installation location.

Appellants submit that Melink teaches an interface that may include input switches to input control data or select from menu options. *See* Melink, col. 10 lines 57-60. However, Melink does not teach control of the operation of the air moving device and a position of the air flow direction control device based upon site-specific factors such as a hood width, site dimensions, installation location, height above the cooktop and type of fuel through the control circuitry.

For at least this reason, Appellants respectfully request that the Board overturn the Examiner's rejection of claim 22, as well as the claims that depend therefrom.

d. Melink does not teach regulating operation of the air flow control device to reduce acoustic noise.

With regard to independent claim 35, Appellants respectfully note that Melink does not teach regulating operation of the *air displacement system* based upon signals from the sensor and upon characteristics of the air displacement system to reduce the acoustic noise of the ventilation system.

The Examiner asserted that the Melink apparatus has the claimed structure and is disclosed as reducing acoustic noise by varying the fan speed. As noted above, Melink does not teach operating in either recirculation or exhaust mode utilizing an air flow direction control device connected to a controller. Further, Melink does not teach control of such air flow direction control device for reducing acoustic noise based upon signals from the sensor and characteristics of such device. Rather, Melink discloses increasing or decreasing a volume rate of exhaust to avoid sudden cycling of the motor and/or unsettling variations in noise or air flow.

For at least this reason, Appellants respectfully request that the Board overturn the Examiner's rejection of claim 35, as well as the claims that depend therefrom.

B. **Second Ground of Rejection for Review on Appeal:**

The Examiner rejected claims 8, 9, 11-13, 21, 29, 30 and 32-34 under 35 U.S.C. § 103(a) as being as being rendered obvious by Melink in view of Bowen further in view of Morton and further in view of Wang.

Each of the foregoing rejected claims depends from one of independent claims 1, 14, or 22 discussed above. Moreover, each of the Examiner's obviousness rejections is founded upon the Melink, Bowen and Morton references, which are also discussed above. With this in mind, Appellants respectfully assert that the Wang reference, employed in conjunction with the Melink, Bowen and Morton references, does not obviate the deficiencies of the Melink, Bowen and Morton references, as discussed in the foregoing remarks regarding the Examiner's rejections of independent claims 1, 14 and 22. Accordingly, Appellants respectfully assert that the instant claims are not only patentable due to their respective dependencies on allowable base claims, but also by virtue of the additional features recited therein.

In light of the forgoing remarks, Appellants respectfully request that the Board withdraw the obviousness rejections in relation to claims 8, 9, 11-13, 21, 29, 30 and 32-34.

C. **Third Ground of Rejection for Review on Appeal:**

The Examiner rejected claims 10 and 31 under 35 U.S.C. § 103(a) as being as being rendered obvious by Melink in view of Bowen, further in view of Morton, and further in view of Wang and Jensen.

Each of the foregoing rejected claims depends from one of independent claims 1, or 22 discussed above. Moreover, each of the Examiner's obviousness rejections is

founded upon the Melink, Bowen, Morton references, which are also discussed above. With this in mind, Appellants respectfully assert that the Wang and Jensen references, employed in conjunction with the Melink, Bowen and Morton references, do not obviate the deficiencies of the Melink, Bowen and Morton references, as discussed in the foregoing remarks regarding the Examiner's rejections of independent claims 1 and 22. Accordingly, Appellants respectfully assert that the instant claims are not only patentable due to their respective dependencies on allowable base claims, but also by virtue of the additional features recited therein.

In light of the forgoing remarks, Appellants respectfully request that the Board withdraw the obviousness rejections in relation to claims 10 and 31.

Conclusion

Appellants respectfully submit that all pending claims are in condition for allowance. However, if the Examiner or Board wishes to resolve any other issues by way of a telephone conference, the Examiner or Board is kindly invited to contact the undersigned attorney at the telephone number indicated below.

Respectfully submitted,

Date: December 5, 2007

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8. **APPENDIX OF CLAIMS ON APPEAL**

Listing of Claims:

1. A kitchen ventilation system comprising:

a sensor for detecting a chemical composition over an active zone of a cooktop;

an air moving device for displacing air including the chemical composition;

an air flow direction control device for directing air displaced by the air moving device between exhaust and recirculation flow paths; and

control circuitry coupled to the sensor, to the air moving device and to the air flow direction control device for regulating operation of the air moving device and a position of the air flow direction control device based upon signals from the sensor.

2. The system of claim 1, wherein the chemical composition is selected from the group comprising of cooking fumes, vapors, smoke and combustion byproducts.

3. The system of claim 1, wherein the sensor comprises at least one of a heated metal oxide gas sensor, an electro-chemical gas sensor, pellistors, a hot wire catalytic gas sensor, a semiconductor gas sensor, a photo ionization smoke detectors, a thermal conductivity type gas sensor, an ultrasonic gas sensor, a UV flame sensor, an IR temperature sensor, a heat flux sensor and a air velocity sensor.

4. The system of claim 1, wherein the sensor is further configured to acquire temperature and humidity data over an active zone of the cooktop.

5. The system of claim 1, wherein the control circuitry comprises of a controller with a set of pre defined stored programs that can be individually executed by a user of the system.

6. The system of claim 1, wherein the control circuitry comprises of a controller configured to compute temperature and humidity compensated response of an air quality sensor based upon temperature and humidity data acquired over the active zone of the cooktop.

7. The system of claim 1, wherein the control circuitry comprises of a controller that receives and transmits signals pertaining to the status of air quality and corresponding control and display signals remotely through at least one of infrared, radio frequency and electromagnetic transmission modes.

8. The system of claim 1, further comprising an air purification device for reducing content of the chemical composition in the displaced air.

9. The system of claim 8, wherein the air purification device is an active device.

10. The system of claim 8, wherein the air purification device is a corona discharge device.

11. The system of claim 8, wherein the air purification device is a UV air purification device.

12. The system of claim 8, wherein the air purification device comprises a filter to facilitate odor destruction and microorganism destruction.

13. The system of claim 8, wherein the air purification device comprises grease filter.

14. A method for ventilating air over an active side of a cooktop comprising:

detecting a chemical composition over a cooktop on which cooking is performed through a sensor;

controlling an air moving device for displacing air from the cooktop and an air flow direction control device for directing air displaced by the air moving device between exhaust and recirculation flow paths based upon the sensed chemical composition over the cooktop.

16. The method of claim 15, wherein the chemical composition is selected from a group comprising of cooking fumes, vapors, smoke and combustion byproducts.

17. The method of claim 15, wherein the sensor comprises at least one of a heated metal oxide gas sensor, an electro-chemical gas sensor, pellistors, a hot wire catalytic gas sensor, a semi-conductor gas sensor, a photo ionization smoke detectors, a thermal conductivity type gas sensor, an ultrasonic gas sensor, a UV flame sensor, an IR temperature sensor, a heat flux sensor and a air velocity sensor.

18. The method of claim 14, wherein sensing a side of a cooktop further comprises acquiring temperature and humidity data over an active zone of the cooktop.

19. The method of claim 14, wherein the controlling step comprises of receiving and transmitting signals pertaining to the status of air quality and corresponding control and display signals remotely through at least one of infrared, radio frequency and electromagnetic transmission modes.

20. The method of claim 14, wherein the controlling step comprises executing a set of pre defined programs stored in a controller by a user.

21. The method of claim 14, further comprising purifying of the air over the active side of the cooktop through an air purification device by reducing content of the chemical composition sensed by the sensor over the cooktop.

22. A kitchen ventilation system comprising:

a sensor for detecting an operating parameter of a cooktop;

an air moving device for displacing air from the cooktop;

an air flow direction control device for directing air displaced by the air moving device between exhaust and recirculation flow paths; and

control circuitry coupled to the sensor, to the air moving device and to the air flow direction control device for regulating operation of the air moving device and a position of the air flow direction control device based upon signals from the sensor, wherein operation of the control circuitry is configurable based upon site-specific factors of a site in which the ventilation system is installed.

23. The system of claim 22, wherein the sensor comprises at least one of a heated metal oxide gas sensor, an electro-chemical gas sensor, pellistors, a hot wire catalytic gas sensor, a semi-conductor gas sensor, a photo ionization smoke detectors, a thermal conductivity type gas sensor, an ultrasonic gas sensor, a UV flame sensor, an IR temperature sensor, a heat flux sensor and a air velocity sensor.

24. The system of claim 22, wherein the operating parameter is a chemical composition of air over an active zone of the cooktop.

25. The system of claim 24, wherein the chemical composition is selected from a group comprising of cooking fumes, vapors, smoke and combustion byproducts.

26. The system of claim 22, wherein the operating parameter is temperature of air over the active zone of the cooktop.

27. The system of claim 22, wherein the operating parameter is humidity of air over the active zone of the cooktop.

29. The system of claim 22, further comprising an air purification device for reducing content of the chemical composition in the displaced air.

30. The system of claim 29, wherein the air purification device is an active device.

31. The system of claim 29, wherein the air purification device is a corona discharge device.

32. The system of claim 29, wherein the air purification device is a UV air purification device.

33. The system of claim 29, wherein the air purification device comprises a filter to facilitate odor destruction and microorganism destruction.

34. The system of claim 29, wherein the air purification device comprises grease filter.

35. A kitchen ventilation system comprising:

a sensor for detecting an operating parameter of a cooktop;

an air displacement system including an air moving device for displacing air from the cooktop, and an air flow direction control device for directing air displaced by the air moving device between exhaust and recirculation flow paths; and

control circuitry coupled to the sensor and to the air displacement system for regulating operation of the air displacement system based upon signals from the sensor and upon characteristics of the air displacement system to reduce acoustic noise of the ventilation system during operation.

36. The system of claim 35, wherein the sensor comprises at least one of a heated metal oxide gas sensor, an electro-chemical gas sensor, pellistors, a hot wire catalytic gas sensor, a semi-conductor gas sensor, a photo ionization smoke detectors, a thermal conductivity type gas sensor, an ultrasonic gas sensor, a UV flame sensor, an IR temperature sensor, a heat flux sensor and a air velocity sensor.

37. The system of claim 35, wherein the operating parameter is a chemical composition of air over an active zone of the cooktop.

38. The system of claim 37, wherein the chemical composition is selected from a group comprising of cooking fumes, vapors, smoke and combustion byproducts.

39. The system of claim 35, wherein the operating parameter is temperature of air over the active zone of the cooktop.

40. The system of claim 35, wherein the operating parameter is humidity of air over the active zone of the cooktop.

41. The system of claim 35, wherein the characteristics of the air displacement system comprises a set of operating set point references for the air displacement system.

42. The system of claim 35, wherein the characteristics of the air displacement system comprises a set of operating cycle timing references for the air displacement system.

43. The system of claim 35, wherein the characteristics of the air displacement system comprises a ventilation rate look-up table for the air displacement system.

9. **EVIDENCE APPENDIX**

None.

10. **RELATED PROCEEDINGS APPENDIX**

None.